

RESPONSE TO PUBLIC COMMENTS

From March 30, 2006 to April 28, 2006, the U.S. Environmental Protection Agency-Region 1 (“EPA”) and the Massachusetts Department of Environmental Protection (“MassDEP”) released a draft National Pollutant Discharge Elimination System (“NPDES”) permit (No. MA0102253) for public comment for the discharge of treated wastewater from the MCI Norfolk Water Pollution Control Facility to the Stop River.

EPA received comments on the draft permit in March 2006 (the “March 2006 draft permit”) from the Massachusetts Riverways Program, the Charles River Watershed Association and the Conservation Law Foundation.

The comments received during the 2006 comment period resulted in the Agencies proposing a more stringent effluent limitation for total phosphorus in a draft permit released for public comment on May 29, 2008 (the “May 2008 draft permit”). In the May 2008 draft permit, EPA also revised the copper limits from those that were in the March 2006 draft permit to reflect the recent changes to the Massachusetts Water Quality Standards. A detailed explanation of changes made to the March 2006 draft permit are in the revised fact sheet prepared for the May 2008 draft permit.

The public comment period for the May 2008 draft permit began on May 29, 2008 and ended June 27, 2008. After a review of the all the comments received, EPA has made a final decision to issue the permit authorizing the discharge. This document describes the changes and briefly describes and responds to the comments received on both the March 2006 draft permit and the May 2008 draft permit.

A copy of the final permit may be obtained by writing or calling Betsy Davis, United States Environmental Protection Agency, 1 Congress Street, Suite 1100 (CMP), Boston, Massachusetts 02114-2023; Telephone (617) 918-1576.

Comments on the May 2008 draft permit were received from Mr. Jeffery Quick, Director, Division of Resource Management, Massachusetts Department of Correction, Norfolk, Massachusetts, dated June 25, 2008.

Comment #1: The Massachusetts Department of Correction (DOC) has reviewed the Draft NPDES Permit No. MA0102253 and is writing to object to the proposed total phosphorus concentration and reporting period. The Draft Permit for the MCI Norfolk Water Pollution Control Facility (WPCF) was initially written in March 2006 with a monthly average total phosphorus limit of 0.2 milligrams per liter (mg/l) from April 1 to October 31. EPA recently revised the limit to 0.10 mg/l based on comments received from the Conservation Law Foundation and the Charles River Watershed Association that were formally submitted over two years ago. We believe that the revised phosphorus limit is arbitrary and capricious because it is not based on site-specific data that supports the limit necessary to meet in-stream water quality standards. It is important to note that the stringent phosphorus levels, as well as this lengthy permitting process has created a hardship to the Department as it tries to move forward with this important project.

Basis for Objection

The basis for the DOC objection is that the revised phosphorus limit is based on generalized EPA guidance documents and not site-specific criteria. The revised phosphorus limit will require the construction of additional treatment processes at the facility at significant monetary cost to the Commonwealth.

Upgrading the MCI Norfolk WPCF to achieve an effluent phosphorus limit of 0.10 mg/l would require the addition of a tertiary treatment process with capital costs estimated to range from two to six million dollars (based on information from other treatment facilities in Massachusetts that are in construction or have recently been upgraded to meet tertiary phosphorus levels). Meeting a phosphorus limit of 0.20 mg/l would not require the addition of a new tertiary treatment process.

Considering the significant cost implications of this proposed permit modification, it is important that the phosphorus limit is based on site specific scientific data that supports the premise that the limit is necessary to meet water quality standards. The *Revised Fact Sheet* indicates that this scientific data is not available at this time. This statement is supported as follows:

The *Revised Fact Sheet* references the *Massachusetts Year 2006 Integrated List of Waters* and states that the segment of the Stop River is “impaired due to impaired biocommunity, nutrients, organic enrichment/low dissolved oxygen and pathogens.” Based on our review of the referenced document, we believe this statement is erroneous. On page 100 of the *Massachusetts Year 2006 Integrated List of Waters* (enclosed for reference), under the list entitled *Massachusetts Category 5 Waters “Waters requiring a TMDL,”* the Stop River both upstream and downstream of MCI Norfolk is listed with impairment pollutants characterized as “**cause unknown**, organic enrichment/low dissolved oxygen and pathogens.” **There is no listing of “nutrients.”** Appendix 1 of the report provides definitions for each of the impairment causes and “nutrients” (specifically phosphorus for fresh waters) is a specific available category. The fact that nutrients were not specifically identified in the report for the Stop River indicates that the need for a revised phosphorus limit is not justified.

A Total Maximum Daily Loading (TMDL) study for the Stop River has not yet been prepared. The revised phosphorus limit is arbitrary without site - specific data to support it.

The Massachusetts Water Quality Standards require that the highest and best practical treatment is provided. According to the *Revised Fact Sheet*, this is defined as a monthly average phosphorus limit of 0.2 mg/l. Therefore, the revised phosphorus limit of 0.1 mg/l is more stringent than the Massachusetts Water Quality Standards without any site specific data to support the need for the more stringent limit.

In supporting the revised limit, the *Revised Fact Sheet* references to *MassDEP Technical Memorandum T72-9, Charles River Water DWM Year 2002 Water Quality Monitoring Data-Rivers*. The data referenced from the technical memorandum indicates that the in-stream phosphorus concentrations upstream of the MCI Norfolk WPCF discharge (0.11 mg/l to 0.17 mg/l) were higher than

concentrations down stream of the MCI Norfolk WPCF discharge (0.10 mg/l to 0.14 mg/l). This fact suggests that the phosphorus loading from the MCI Norfolk WPCF does not negatively impact in-stream phosphorus concentrations, further supporting the argument that the arbitrary guidance criteria EPA is utilizing does not apply and should not be used for setting the MCI Norfolk WPCF phosphorus limit.

The DOC, Massachusetts Division of Capital Asset Management (DCAM), and Woodard & Curran, met with EPA and MassDEP on February 4, 2008, to discuss the secondary treatment upgrades that DCAM and DOC were planning for the MCI Norfolk WPCF and to determine how the March 2006 Draft NPDES permit might affect the planned upgrades. At the meeting, EPA stated that they would be revising the phosphorus limit in the 2006 Draft NPDES permit from 0.2 mg/l to **0.13 mg/l**. EPA indicated at the meeting that the 0.13 mg/l limit was calculated based on the *1986 Quality Criteria of Water* (“Gold Book”). The *Revised Fact Sheet* states that the limit of 0.10 mg/l was derived using the Gold Book. The *Revised Fact Sheet* makes no reference to the limit of 0.13 mg/l discussed at the February 4, 2008 meeting and provides no explanation of why EPA has change the limit from 0.13 mg/l to 0.10 mg/l. The extended duration in the NPDES permitting process has resulted in delays to the design and construction of the secondary treatment upgrades for the MCI Norfolk WPCF.

Response: Basis for the phosphorus limits

As described in the fact sheet for the May 2008 draft permit, comments received from the Conservation Law Foundation and the Charles River Watershed Association on the March 2006 draft permit raised substantial new questions on the monthly average phosphorus effluent limit proposed for the months of April through October. Based on further analysis and on consideration of technical information and guidance in the administrative record, EPA determined that the monthly average phosphorus limit for the months of April through October was not sufficiently stringent and proposed a more stringent limit in the May 2008 draft permit. Upon further review, EPA changed the seasonal phosphorus limit to 0.1 mg/l. The fact sheet issued with the May 2008 draft permit provides the basis for the more stringent seasonal phosphorus limit.

As stated in the fact sheet, provisions in the Clean Water Act (CWA) and federal regulations in 40 CFR Part 122 support the Agencies decision to make the seasonal phosphorus limit in the final permit more stringent. The CWA prohibits the discharge of pollutants to waters of the United States. Federal regulations at 40 CFR 122.44(d) specify that effluent limitations in NPDES permits must control all pollutants or pollutant parameters which are or may be discharged at a level which cause, have a reasonable potential to cause or contribute to an excursion above any state water quality standard including a state narrative criteria.

Massachusetts Surface Water Quality Standards found at 314 CMR 4.05 (5) require that “*Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to*

314 CMR 4.00. This section of the Standards further requires that, “Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs...”

MassDEP has established that a monthly average phosphorus limit of 0.2 mg/l represents the HBPT for POTWs as a technology-based limit. However, EPA must also ensure that the discharge of a pollutant does not cause or contribute to an exceedance of state water quality standards. In this case, it was determined that the state HBPT limit of 0.2 mg/l was not sufficiently stringent to ensure that water quality standards would be met, so a more stringent limit for achieving the State’s narrative water quality criteria was developed and proposed, consistent with the method described in 40 CFR 122.44(d)(1)(vi)(B). Nothing in the regulations suggests that EPA is required to wait for the completion of an approved TMDL or that an effluent limit must be based on site-specific criteria.

A TMDL has not been completed for the Stop River. EPA and MassDEP relied on the best information available to establish the permit limit for phosphorus. The Agencies reviewed studies and reports evaluating phosphorus levels upstream and downstream of the treatment plant’s discharge and reviewed a wide range of other pertinent material, including EPA technical guidance, state laws and policies applicable to the narrative state water quality criterion, and other water quality studies. If a completed TMDL for the Stop River proposes an effluent phosphorus limit different from the limit in this permit, the permit can be re-opened and changed to reflect the requirements of the TMDL. Any modification to the limit would be subject to standard public noticing and public comment period as required by EPA regulations.

The data from the *MassDEP Technical Memorandum T72-9, Charles River Water DWM Year 2002 Water Quality Monitoring Data-Rivers* presented in the fact sheet refers to samples collected one-half mile upstream of the discharge at river mile 4.09 and two and a quarter miles downstream of the discharge at river mile 2.065. (See pages 10 and 23 of the *MassDEP Technical Memorandum T72-9*). Instream phosphorus concentrations upstream and downstream of the discharge on June 4, 2002 were 0.12 mg/l and 0.14 mg/l, indicating that the effluent from MCI Norfolk may increase the phosphorus concentration in the river. There is the potential for substantial phosphorus uptake in the sediment, as the distance from the facility’s outfall to the downstream sampling point is approximately 2 ¼ miles. Another factor was that the 2002 flow data from the USGS gages in Medway (01103280) and Dover (01103500) were considerably higher than what the flow would be during 7Q10 conditions. During 7Q10 conditions the potential for phosphorus concentration in the river would be substantially higher. The chart below shows the 2002 data from this report.

	Upstream TP	Downstream TP
4/29/2002	0.12 mg/l d*	0.10 mg/l d*
6/ 4/2002	0.12 mg/l	0.14 mg/l
8/ 6/2002	0.17 mg/l	0.11 mg/l
9/9/ 2002	0.11 mg/l	0.10 mg/l

d* precision of field duplicates (as RPD) did not meet project data quality objectives identified for program or in the QAPP.

Without having the exact flows and phosphorus concentrations of both the WWTP effluent and the receiving water upstream of the discharge, the instream phosphorus concentration immediately downstream of the discharge cannot be predicted for any given day. However, a simple mass balance equation shows that a discharge of 0.2 mg/l total phosphorus (the limit proposed in the March 2006 draft permit) would always increase the downstream phosphorus concentration for any upstream concentration less than 0.2 mg/l. For example, using an upstream phosphorus concentration of 0.14 mg/l (the midpoint of the range of upstream concentrations cited in the May 2008 fact sheet), the 7Q10 flow, the treatment plant design flow, and a treatment plant effluent concentration of 0.2 mg/l yields an instream concentration of 0.18 mg/l as shown in the equation below:

$$Q_r C_r = Q_d C_d + Q_s C_s$$

Where

Q_r = receiving water flow downstream of the discharge ($Q_d + Q_s$), 0.944 cfs

C_r = total phosphorus concentration in the receiving water downstream of the discharge

Q_d = discharge flow from the facility, 0.75 cfs

C_d = total phosphorus concentration in the discharge, 0.2 mg/l

Q_s = receiving water flow upstream of the discharge, 0.194 cfs

C_s = total phosphorus concentration upstream of the discharge, 0.14 mg/l

Solving for C_r yields:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

$$C_r = \frac{(0.75)(0.2) + (0.194)(0.14)}{0.944} = 0.18 \text{ mg/l}$$

Regarding the comment that the Stop River is not listed on the Massachusetts Year 2006 Integrated Lists of Waters, the enclosure submitted with the DOC's comment was a copy of the proposed Massachusetts Year 2006 Integrated List of Waters. The final Massachusetts Year 2006 Integrated List of Waters was issued in August 2007, and nutrients are listed as a pollutant needing a TMDL for the entire Stop River.

Regarding the comment that EPA discussed an effluent limit of 0.13 mg/l at the February 4, 2008 meeting, that limit was based on an assumption that the upstream phosphorus concentration was negligible. The derivation of this limit is shown below:

$$Q_r C_r = Q_d C_d + Q_s C_s$$

Where

Q_r = receiving water flow downstream of the discharge ($Q_d + Q_s$), 0.944 cfs

C_r = total phosphorus concentration in the receiving water downstream of the discharge, Gold Book criteria of 0.1 mg/l

Q_d = discharge flow from the facility, 0.75 cfs

C_d = total phosphorus concentration in the discharge (effluent limit)

Q_s = receiving water flow upstream of the discharge, 0.194 cfs

C_s = total phosphorus concentration upstream of the discharge, assume 0 mg/l

Solving for C_d yields:

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d}$$

$$C_d = \frac{(0.944)(0.1) - (0.194)(0)}{0.75} = 0.13 \text{ mg/l}$$

As described in the fact sheet for the May 2008 permit, EPA's subsequent review of upstream data showed that the upstream concentration of phosphorus exceeded the Gold Book criteria of 0.1 mg/l. It was then decided that a limit of 0.1 mg/l was necessary to ensure that the discharge did not contribute to a violation of water quality standards.

Treatment Plant Upgrades

As previously mentioned, EPA is required to establish permit limits that satisfy both technology and water quality requirements of the federal Clean Water Act. Water quality based effluent limits are designed to ensure that state water quality standards are met regardless of the technological and economic factors that inform the derivation of technology based limitations. In particular, section 301(b)(1)(C) of the CWA requires achievement of "any more stringent limitation [than the technology-based requirements set forth in Section 301(b)(1)(A) and (B)], including those necessary to meet water quality standards...established pursuant to any State law or regulation...." Thus, NPDES permits must contain effluent limitations necessary to attain and maintain water quality standards, without consideration of the cost, availability or effectiveness of treatment technologies. See *U.S. Steel Corp. v. Train*, 556 F.2d 822, 838 (7th Cir. 1977) (finding "states are free to force technology" and "if the states wish to achieve better water quality, they may [do so], even at the cost of economic and social dislocations"); *In re City of Moscow*, 10 E.A.D. 135, 168 (EAB 2001) (quoting *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-601 (CJO 1988) (stating that Section 301(b)(1)(C) "requires unequivocal compliance with applicable [water

quality standards], and does not make any exceptions for cost or technological feasibility”).

As allowed under State Water Quality Standards at 314 CMR 4.03(1)(b), the final permit does include a schedule for complying with the new, more stringent phosphorus limit. This schedule provides time to study, plan, design, and construct changes to the plant necessary to meet the limit (See Section I. E of the final permit). This schedule allows the permittee four years to achieve compliance with the final permit limit for total phosphorus of 0.10 mg/l. During this time period, the current summer effluent limit of 0.2 mg/l total phosphorus will remain in effect with monitoring 1/week.

Comment # 2: The new phosphorus limit, whether it is the current or the revised limit will result in significant monetary costs to the Commonwealth. In the event EPA provides technical information to justify the proposed permit changes, DOC has identified several factors that could lessen the financial burden and is requesting that EPA consider these prior to issuing the final permit. These additional considerations are as follows:

Shift the seasonal limits to a more stringent phosphorus limit during the November to March period, (i.e. 0.5 mg/l instead of the proposed 1.0 mg/l), as a trade-off for a less stringent limit during the April to October period (i.e. 0.20 mg/l instead of the proposed 0.10 mg/l limit). This would maintain the same or lower annual total phosphorus loading on the stream while keeping the permit limits to a range that is achievable with the existing WPCF unit processes.

Increase the averaging period for permit compliance. The nature of the population the DOC WPCF serves makes the WPCF subject to greater variations in domestic wastewater characteristics than what is typical for most municipal WPCFs. The draft permit requires weekly measurement of phosphorus with a monthly average limit. Increasing the reporting duration from monthly to seasonally would allow the Commonwealth to more readily achieve a stringent phosphorus limit without negatively impacting water quality.

The revised NPDES permit has resulted in delays to the secondary treatment upgrades for the WPCF. The upgrades are important because the existing secondary process consists of three package treatment units (PTUs) that are beyond their useful service life. Metal components of the PTUs have significant corrosion and all three of the PTUs must operate to meet the daily treatment demands. For this reason, DOC, with concurrence from DCAM, has made the decision to proceed with the secondary treatment upgrades because we believe we cannot afford further delays and the associated risk of failure of the PTUs. Therefore, secondary treatment upgrades will be designed with provisions to accommodate a future tertiary phosphorus treatment process should it ultimately be deemed necessary.

Response: Regarding the technical basis for the limit, we believe the revised fact sheet and response to comment #1 adequately support the monthly average phosphorus limit of 0.1 mg/l.

As described previously, the monthly average limit was developed to ensure that the discharge does not cause the instream concentration to exceed 0.1 mg/l under 7Q10 stream flow conditions, and treatment plant design flow, consistent with the Massachusetts Water Quality Standards as required in 314 CMR 4.03(3) and in the federal regulations found at 40 CFR 122.45(b)(1). The alternative limits proposed by the commenter are based on maintaining an annual average load equal to those in the proposed permit, but would clearly result in an instream exceedance of 0.1 mg/l under summer, low flow (7Q10) conditions. The months in which the 0.1 mg/l phosphorus limit applies are based on the growing season for aquatic plants. During the growing season, aquatic plant growth assimilate phosphorus as biomass which can later result in the accumulation of phosphorus in the sediment as the plants decompose. In order to minimize this continuing source of phosphorus, more stringent limits are necessary throughout the growing season.

During the winter months, phosphorus is transported out of the system with higher flows. EPA has applied the state-wide 1.0 mg/l effluent limit on phosphorus having total phosphorus limits in effect year round. The total phosphorus limits on a year-round basis will subsequently result in an overall reduction in the annual load. Therefore, the proposed winter total phosphorus limits will remain unchanged.

The Agencies acknowledge the delay involved in issuing a final permit, and we regret any inconvenience caused to the Massachusetts Department of Corrections as a result of the process.

Comments from Cindy Delpapa, Massachusetts Riverways Program, dated April 25, 2006.

Comment # 3: The draft permit will change the manner in which the monthly average is calculated using an annual average of the monthly averages. This rationale presented for this change is to allow more flexibility for the facility in response to wet weather and to reflect the approach used in facilities planning documents. Having allowances for wet weather for a sanitary sewer runs counter to the intent of the separation of storm and wastewater flows. While elimination of all infiltration and inflow is not practicable, the permitting system should not be actively supporting I&I in a sanitary collection system. A reasonable amount of I&I should not result in a monthly average flow in excess of permit limits. If the I&I does result in an actual monthly average flow greater than the permit limit, it is likely an indication of a system with excessive I&I or a facility nearing its capacity which should trigger facilities planning to address inadequate capacity.

Response: We agree that excessive infiltration and inflow (I&I) is unacceptable and there is now standard language in NPDES permits that address elimination of I&I. The final permit requires the permittee to develop and implement a plan to control and eliminate I&I. See Section I.C.3 of the final permit.

Comment #4: The Fact Sheet also notes the change in the monthly average flow calculation also accommodates the facilities planning approach which looks at annual averages. It seems to be a more logical approach to reassess the facility planning process, which seems to disregard the known existing monthly averaging methodology, to determine why the annual averaging is often below the actual

monthly flow volumes. It seems more prudent and protective to make a change in the facilities planning approach than to change a long-standing approach in Massachusetts NPDES permits, especially a change which is less protective of the receiving water than the existing permit. We would put forward it is the facilities planning process that needs adjustment and not the monthly average flow methodology. We would also argue this new methodology is not as protective of the receiving waters thus it does not live up to the intent of the antidegradation or backsliding regulations.

Response: Compliance with the flow limit in the previous permit (issued in September of 2000) was based on an annual average flow rather than a monthly average flow. MassDEP adopted a policy establishing flow limits in POTW permits as an annual average in order to account for seasonal flow variations, particularly those associated with high flow and high groundwater which commonly occur in the spring time. See June 12, 2000, MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits (A Flow Policy).

Comment #5: On a related topic, this permit dropped a standard clause contained in older NPDES permits, “When effluent discharged for a period of 90 consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans”. Why has this clause been eliminated from newer permit renewals? How is the removal of this requirement consistent with anti-degradation and backsliding regulations? Will there be an exceedance threshold triggering an evaluation of the capacity, treatment capabilities and loadings to make sure a treatment facility addresses serious issues such as capacity?

Response: The following language replaces the clause referred to in the comment and has been included in the final permit.

“If the average annual flow in any calendar year exceeds 80% of the facility’s design flow, the permittee shall submit a report to MassDEP by March 31 of the following calendar year describing plans for further flow increases and discuss how the permittee will remain in compliance with the effluent limitations in the permit.”

Comment #6: The Fact Sheet indicates there was an error made in the previous dilution calculation but the exact nature of the error was not specified. Was it a mathematical error? Or perhaps an error in the pertinent factors used in determining the dilution which has resulted in a higher dilution rate? The calculation of dilution no longer includes the Caritas discharge which, barring any other changes, would have resulted in a decrease in dilution. The Norfolk area has seen a marked increase in development since 1999 and this change could result in physical changes in the watershed- such as reduced recharge which usually leads to diminished base flows and more demand on water and wastewater services. Is it known if there has been any increases in water withdrawals, marked changes in imperviousness and recharge, a change in the

runoff peak volume and timing or additional sewerage in the watershed of the outfall that may have an adverse effect on the 7Q10 of the river? These factors may make a 1999 based dilution calculation obsolete resulting in an inaccurate estimate of dilution.

Response: The March 2006 fact sheet describes the calculation of the dilution factor. The error was noted to clarify the difference for reviewers who might compare the calculations from this fact sheet and the fact sheet for the September 2000 permit. Three changes were made. First, the contributing flows from upstream WWTPs were based on flows from the week of August 7 – 13, 1999, an extreme low flow period when the river flow approached the 7Q10 flow rather than the average WWTP flows for the months of July to September 1999. This resulted in a slightly higher flow factor for the watershed area, which we believe is more realistic, given that the treatment plant discharge flows used in the new calculation are flows measured under actual 7Q10 flow conditions. Second, the correct drainage area at MCI-Norfolk is 10.7 square miles rather than 1.6 square miles, so this drainage area was used in the more recent calculation. Third, the flow from Caritas Southwood Hospital was used in the calculation of the flow factor in the more recent calculations, although it was not used to calculate the 7Q10 flow at the MCI Norfolk discharge because it has been terminated (i.e., the hospital was discharging in 1999, but was terminated by the time the March 2006 fact sheet was written). These changes resulted in a small increase in the estimated 7Q10 flow upstream of the MCI discharge from 0.1866 cfs to 0.194 cfs, and the dilution factor increased from 1.25 to 1.26.

As the commenter noted, the discharge from the Caritas Southwood Hospital upstream of the MCI Norfolk discharge has been terminated, which in the absence of any other changes would have resulted in a reduction of the 7Q10 flow upstream of the MCI Norfolk discharge. However, the other changes, which we believe make the flow calculation more realistic, offset the termination of the Caritas discharge.

Regarding the comment that application of other factors would result in a decrease in the estimated 7Q10, this comment is speculative and does not supply any specific information of how these factors should be quantified and applied to the 7Q10 flow calculation. If Massachusetts Riverways, or any other party, provides information that would support such a reduction, this would be considered new information pursuant to 40 CFR 122.62(a)(2) and may be cause to modify the permit.

Comment #7: BOD₅ and TSS monitoring has been reduced to once weekly. While the facility has been consistently admirably below permit limits for these parameters, consideration should be given to the minimal dilution of the effluent in the Stop River and if this less frequent monitoring will be protective of the receiving water in the long term. We would also like to advocate for a change in the seasonal permit limitations and ask that an early start date of April 1st be considered. This date would coincide with the start of the nutrient seasonal limitations. April 1st is a common seasonal start date for Massachusetts permits, reflecting seasonal aquatic growth and weather patterns. An early start date would also offer more protection for this wastewater dominated receiving water since high river flows in April are not a guarantee, [as exemplified by this year's

(2006) river flows] and the results of a thirty year old load allocation may not be as pertinent at this time since the watershed has changed dramatically since 1976. We also note the facility has winter concentrations regularly meeting the lower summer limits so an earlier commencement date for the summer limitations can be easily met.

Response: During the renewal process, the Agencies review several years of discharge monitoring data submitted by the permittee and adjusts the frequency of monitoring based on performance. The BOD₅ and TSS data submitted on the monthly discharge monitoring reports for this facility have been well below the effluent limitations consistently. EPA is receptive to reducing the monitoring and reporting frequencies of some pollutant parameters when it has been determined that such reductions will not pose a threat to human and/or aquatic life. The decision to reduce monitoring frequencies for individual pollutants and/or pollutant parameters is based on the compliance and enforcement history of the permitted facility, the monitoring frequencies in the current permit, and the percentage below the current limit that a particular pollutant is discharged at (see *Interim Guidance for Performance –Based reductions of NPDES Permit Monitoring Frequencies*, EPA 1996 (EPA-833-B-96-001)). We believe the reduction is justified based on the sampling data submitted for the facility by the permittee.

Comment#8: We support the warm and cold seasonal limitations for total phosphorus. The need for a winter limitation is well presented in the Fact Sheet. The impaired status of the receiving water is a strong indicator that the limits in the draft permit may still be inadequate to address the cultural eutrophication found in the Stop River and we look forward to the findings of the TMDL process to determine the appropriate limitations for this and other sources of nutrients to this waterway. We applaud the MCI facility for their significant proactive measures to reduce phosphorus inputs to the facility and encourage the MCI community to continue with the measures they have instituted to reduce the use of phosphorus containing substances. We, however, do not understand why the frequency of summer monitoring has been reduced and question whether monthly monitoring in the winter will provide enough data to determine loads from the facility given the variability in concentrations recorded in the effluent in the past. Might the reduction monitoring prove counter productive to efforts to tweak the treatment process to achieve consistent and acceptable concentrations? We would also like to encourage load limits be incorporated in the permit, as has been done with ammonia, or at least a report requirement for total phosphorus loads.

Response: See response to comment #7. We believe the reduction in sampling is reasonable based on monitoring data submitted from the permittee. This is a minimum monitoring frequency, and the permittee may increase the monitoring if necessary for process control. Effluent data has been at or below the limit for the past several years.

Comment #9: The Fact Sheet discusses the ammonia limitations for this facility and provides a complete explanation of how the winter ammonia limits were derived but the same detail was not provided for the summer limits. If the summer limit was not back calculated using the instream ammonia criteria and measured instream pH and temperature data, how was the summer limitation developed? The ability of

the facility to meet summer ammonia limits by 1 May is admirable and the change to an earlier start date for the summer limitations will provide better protection for Stop River.

Response: The summer limits have been carried over from the previous permit and are based on the previous wasteload allocation and dissolved oxygen concentration in the River.

At the request of the MassDEP, the final permit includes the intermediate ammonia limit from May 1 through May 31. See response to comment # 15.

Comment #10: We are in full agreement with the EPA's decision to switch from using alternate dilution water back to ambient dilution water. Performing whole effluent toxicity tests with actual receiving water is certainly preferable to using a substitute solution and Footnote #12 retains the option to revert to alternative dilution water if the ambient water develops problems. The WET testing schedule appears to follow the current permit's timing but we would like to encourage a reevaluation of the months the testing is to be performed so a habitually low flow month, August and perhaps September, be captured in the testing schedule.

Response: The schedule for collecting samples for the toxicity tests requirements was established by MassDEP. They implemented a watershed approach several years ago to evaluate the water quality of surface waters throughout the state. Scheduling toxicity tests from all treatment plants the same months in the same watershed supports this approach. Any facility that discharges to the Charles River Watershed is required to collect samples in the months of January, April, July and, October. The intent of this approach is to evaluate the water quality of an entire watershed rather collecting toxicity test samples separately from individual treatment plants during different months. The Agencies believe this approach is a better method to assess the effects of toxicity on aquatic organisms in the river.

Comment #11: The WWTF has been active in its investigation of infiltration and inflow. The corrections made and the work planned for the system should help the situation guided by the draft permit requirements in the draft permit.

Response: Comment noted.

Comments from the Charles River Watershed Association (CRWA) dated April 27, 2006.

Comment #12: Phosphorus

The most significant deficiencies in the draft permit are in the proposed phosphorus limits for both summer and winter. As is clearly laid out in the EPA Fact Sheet, and as CRWA's work as well as the monitoring and data collection that has been undertaken by the Massachusetts DEP and other volunteer groups, the Stop River and the Charles River are undergoing accelerated eutrophication, caused in large part by high levels of phosphorus in the river. Current phosphorus levels in both the Stop River and the Charles River are generally well above recommended limits for phosphorus, and controlling the discharge of phosphorus into the Charles River and its tributaries is a high priority for all watershed stakeholders. The NPDES permit is one of the most important

regulatory mechanisms to control phosphorus discharges, and lower permit limits are a critical tool in this effort

The discharge from the MCI WPCF comprises that vast majority of flow in the Stop River under summer flow conditions, such that effluent concentrations are virtually the same as instream concentrations at the point of discharge and for some distance downstream. The discharge is also a significant source of phosphorus in winter, and contributes to the high levels of phosphorus found in bottom sediments throughout the Stop River and into the Charles River. Sediment-water column dynamics in the summer allow much of the phosphorus in the sediment to be released into the water column, contributing even further to in-stream nutrient enrichment and eutrophication.

The proposed phosphorus limits of 0.2 mg/l in the summer and 1.0 mg/l in the winter are not sufficient to achieve water quality standards or to protect in stream uses. At a minimum, a limit of 0.1 mg/l should be established in the summer, a standard that has been established in other NPDES permits in Massachusetts, and one which is widely acknowledged to be achievable under current treatment technologies. The statement that “a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs’ is simply no longer true.

Until a complete nutrient TMDL is completed for the upper Charles River, including the Stop River, we suggest that the winter phosphorus limit be no higher than 0.5 mg/l to minimize accumulation of phosphorous in sediments.

Response: See response to comment #1

Comment # 13: Increases in effluent limits

CRWA is also extremely concerned with the proposed increases in effluent limits for total residual chlorine, whole effluent toxicity, copper, and aluminum. These proposed increases are based primarily on revised dilution factors, which change the predicted in-stream concentrations of these pollutants. The methodology for using the dilution factor, however, is flawed because it includes the flow from the upstream Wrentham Development Center wastewater treatment plant in the dilution volume. The Wrentham plant has limits that are significantly lower than those proposed in the draft permit for the MCI WPCF, but limits that are nevertheless higher than background baseflow concentrations. The dilution factor for the MCI WPCF permit should be calculated without including this volume at all; alternatively, actual in-stream concentrations upstream of the discharge should be collected, and a dilution factor developed based on this information.

Response: As discussed in the fact sheet and response to comment #6, the dilution factors were calculated using flows from the USGS gage in Dover. Because this gage reflects flows from the WWTPs, they were subtracted out to calculate the base flow. In order to calculate the 7Q10 flow at each facility in the basin, the upstream WWTP discharges were included. Note that this discharge value is the extreme low discharge value from the 1999 dry period, not the plant design flow.

As also discussed in response to comment #6, the increase in the dilution factor, and the corresponding increase in the dilution-based limits for chlorine is small. The aluminum limit differs only in the number of decimal places carried out in the September 2000 permit. The monthly average limit in the permit issued in 2000 was 0.103 mg/l. In the draft 2008 permit, the monthly average limit is rounded to 0.1 mg/l.

These limits are calculated using the national water quality criteria, which include a margin of safety in lieu of the upstream concentration, and the design flow of the plant, which provides an additional margin of safety.

As discussed in the fact sheet, the chronic WET limit, in the draft permit was changed from $\geq 84\%$ to $\geq 80\%$ due to the change in the dilution factor. The limit is derived by taking the inverse of the dilution $[(1 \div 1.26) \times 100\%] = 80\%$.

The copper limits in the final permit reflect the upstream concentration of copper since they are based on site-specific criteria. When applying site-specific copper criteria, a mass balance calculation for average monthly and maximum daily limits was used which includes the upstream copper concentration (C_u) reported in the whole effluent toxicity test results. (Note that the CRWA comments were on the March 2006 draft permit; they did not submit comments on the May 2008 draft permit.)

EPA and MassDEP believe the recalculated limits achieve Massachusetts Water Quality Standards and because they are only slightly less stringent than the limits contained in the previous permit are also consistent with antidegradation requirements.

Comments from the Conservation Law Foundation, dated April 27, 2006

Comment #14: Our principal concern is with the draft permit's summertime (April 1 – October 31) average monthly phosphorous limit of 0.2 mg/l. This is simply a continuation, with more frequent monitoring, of the existing permit's limit that has proven to be inadequate for the attainment of the designated water quality standards for these waters.

The WPCF discharges its effluent into the upper reaches of the Stop River, which ultimately discharges into the Charles River. The Stop River and most of the Charles River are classified as Class B waters under the Massachusetts Surface Water Quality Standards. (Some portions of the Charles are Class A public drinking water supply). As Class B waters, both rivers should be capable of providing and supporting habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation, and have consistently good aesthetic value.

However, the Charles River Watershed Association's TMDL report for the upper Charles River watershed, cited in the Fact Sheet, reports elevated phosphorous levels in both the Stop and Charles Rivers. The Charles is listed under §303(d) of the Clean Water Act as not meeting the designated water quality standards because of cultural eutrophication. Furthermore, as noted in Table 2 to the Fact Sheet, the ambient total phosphorous concentrations downstream of the WCPF

for the May 2001 to April 2004 test period exceeded the 0.024 mg/l level determined in the EPA ecoregion guidance to be necessary for the attainment of these water quality standards in 10 out of the 20 summer months shown, sometimes by a factor of over two. Nonetheless, the Region and MADEP, without explanation, simply dismiss the EPA ecoregion guidance outright as inapplicable. “The draft permit will not establish limits based on the EPA ecoregion guidance but will maintain the existing limit of 0.2 mg/l for Total Phosphorous from April through October” (Fact Sheet, page 6).

Where necessary for the attainment of water quality standards, both numeric and narrative, §301(b)(1)(C) of the federal Clean Water Act requires limits more stringent than technology-based limits. Cost and technological considerations may not be considered in establishing such water-quality based limitations. In re Westborough and Westborough Treatment Plant Board, 10 E.A.D. 297 at 312 (2002). Further, 40 CFR §122.4(d) provides that:

“No [NPDES] permit may be issued . . . [w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States (emphasis added).”

The Fact Sheet notes that the Massachusetts water quality standard for nutrients provides that discharges of nutrients, such as phosphorous, encouraging eutrophication are to be provided with “the highest and best practical treatment to remove such nutrients”, and states that “MADEP has established that a monthly average total phosphorous limit of 0.2 mg/l represents the highest and best practical treatment for POTWs”. This, however, does not overcome the EPA’s independent obligation under §301(b)(1)(C) of the Clean Water Act and 40 CFR §122.4(d) to determine whether or not that 0.2 mg/l limit will “ensure” compliance with the applicable water quality standards. The Environmental Appeals Board in its recent decision, In re City of Marlborough, Massachusetts, Easterly Wastewater Treatment Facility, NPDES Appeal No. 04-13, August 11, 2005 (the “Hop Brook decision”), remanded the permit under appeal in that case, notwithstanding MADEP’s certification under §401(a) of the Clean Water Act, because the record in the case did not establish with the high degree of certainty required by 40 CFR §122.4(d) that the permit’s 0.1 mg/l phosphorous limitation, by itself, would meet the State’s water quality standards. “. . . when the Region reasonably believes that a state water quality standard requires a more stringent limitation than that reflected in a state certification, the Region has an independent duty under section 310(b)(1)(C) . . . to include more stringent limitations”. (Hop Brook decision, footnote 22).

We respectfully submit that the draft permit for the WPCF, if appealed to the Environmental Appeals Board, would suffer the same fate as the permit in the Hop Brook decision (where the phosphorous limit was half that of the WPCF’s in this draft permit) because, based on the Fact Sheet alone, the record in this case does not establish with the degree of certainty required by that decision that the 0.2 mg/l phosphorous limit will result in the attainment of the applicable water quality standards. The statement in the Fact Sheet that a more stringent limitation “may” be imposed if the 0.2 mg/l limit proves to be insufficient does not cure this defect any more than it did in the Hop Brook decision.

Response: See response to comment #1.

Comments from the Massachusetts Department of Environmental Protection, Central Regional office, dated April 3, 2006.

Comment #15: Seasonal ammonia limits. The draft permit combined the May 1 - May 31 intermediate step with the summer limits. The comment focused on a situation where the facility might not be able to achieve 1 mg/l ammonia by May 1 if it loses nitrification during the winter and the spring is cold and wet.

Response: Although the facility has been able to meet the warm weather limits by May 1 in the past, the intermediate step is still protective of fish and other aquatic life. Therefore, the average monthly May ammonia limits will remain at 5 mg/l and 20 lbs/day, and the maximum daily limit at 7.5 mg/l and 30 lbs/day.

Additional changes:

1. Effective date: For EPA administrative purposes, the permit effective date has been changed to 60 days after the 1st day of the month following signature, and the expiration date is the last day of the month, five years from the effective date.

2. Toxicity test sample points. The chemical analysis of the dilution water samples collected from an upstream location for toxicity tests may be used to help assess whether or not the designated uses are being met and may be published in water quality assessment reports for each basin. To ensure the accuracy of the collection points, Footnote 12 requires the permittee to submit a topographic or other map indicating the collection points for the diluent and effluent samples with the first toxicity test submitted under this permit, and to notify the agencies if the location changes.

3. *E. coli* effluent limits and monitoring: The permit includes as a state certification requirement the inclusion of *E. coli* effluent limits and monitoring. The limits reflect recent changes in the Massachusetts Surface Water Quality Standards (December 29, 2006; approved by EPA in 2007) which adopted *E. coli* or enterococci as the fresh water bacteria standard. The *E. coli* limits will go into effect one year from the effective date of the permit. The one year period will provide the permittee an opportunity to test for *E. coli* and to determine if the current treatment system is capable of achieving the new effluent limitations.

4. A reopener clause (Section F) was added to the final permit which highlights the conditions in Part II which allow for the permit to be reopened if it is deemed appropriate due to new information such as a completed Total Maximum daily Load (TMDL) report.